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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/656,023

09/05/2003

Mike Suk

HIT1P030/HSJ9-2003-0155US

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02/07/2005

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EXAMINER

SLAVITT, MITCHELL R

ART UNIT

PAPER NUMBER

2651

DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/656,023

Applicant(s)

SUK, MIKE

Examiner

Mitchell R Slavitt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/5/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5-6, 10-14, 16, 20-21, 24-27, and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyatake et al. (Miyatake) in view of Chey et al. (Chey) and Meyer et al. (Meyer).

Regarding claims 1, 5-6, 10-12, 16, 20, 26-27, and 29-30, Miyatake teaches a drive with a head for reading data from a disk that measures an amplitude of a signal obtained during reading determining a degree of variation in the signal amplitude as a function of the position of the head relative to the disk. See Figs 1-3 and at col 4, lines 40-49. Miyatake does not teach selectively heating the head based on the variation in the signal amplitude to reduce the fly height. Chey teaches this feature at page 1, para [0006], last sentence. At the time of the invention it would have been obvious to modify the method of measuring the amplitude of the signal as taught by Miyatake with the use of a heater as taught by Chey to move the head closer to the disk since the signals read by the head are stronger and less prone to originate from adjacent tracks where the disk tracks are formed in close proximity to achieve high bit density. Neither Miyatake nor Chey teach the selecting of an appropriate fly height. Meyer teaches this feature at Fig 7 (236). At the time of the invention it would have been obvious to modify the teaching

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of Miyatake and Chey to select an appropriate fly height once it was determined that signal over the data had a low amplitude and it was necessary to extend the head closer to the disk to obtain a better reading.

Regarding claims 2, 13, and 25, Miyatake teaches the amplitude can be determined at various radial positions. See col 8, lines 10-18. It follows that Chey's teaching of inducing protrusion to lower the head could result at any position on the disk.

Regarding claims 3 and 14, Miyatake teaches the amplitude variation as it relates to various positions of the disk at col 8, lines 10-18.

Regarding claims 21 and 24, neither Miyatake nor Chey teach mapping height variations of a surface of a disk. Meyer teaches this feature at col 6, lines 25-33. At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the teaching of Miyatake and Chey with the teaching of mapping a disk surface to identify the areas on a disk where heating the head could cause a collision due to asperities on the surface.

Regarding claim 31-32, Miyatake does not expressly teach a slider and a control unit coupled to the head for controlling head operations. Chey teaches these features at page 2, paras [0015] and [0017]. At the time of the invention it would have been obvious to modify the teaching of Miyatake with the suggestion of a controller to move the head located on a slider so that where a weak amplitude signal is received, the controller can induce the heater to cause the head to move closer to the disk.

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3. Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyatake, Chey, and Meyer, as to claim 1 above, and further in view of Ishiguro.

Miyatake, Chey, and Meyer teach all the elements of the claim except for the method of writing data to the disk prior to reading data from the disk. Ishiguro teaches this feature in his Abstract. At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the teaching of Miyatake, Chey, and Meyer with the suggestion of Ishiguro to confirm the accuracy of the written data through reading by adjusting the head where a weak amplitude of the signal would not have otherwise identified an error in writing.

4. Claims 7, 17, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyatake, Chey, and Meyer, as to claim 1 above, and further in view of Wilson.

Miyatake, Chey, and Meyer teach all the elements of the claim except for the method of determining amplitude variations using a modulation detector. Wilson teaches this feature at col 4, lines 25-37. At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the teaching of Miyatake, Chey, and Meyer with the suggestion of Wilson to use a modulation detector to monitor fly height to determine when the head was above a certain distance from the disk so that heat could be applied to lower the head closer to the disk to obtain a better reading of the data signals.

5. Claims 8, 18, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyatake, Chey, and Meyer, as to claim 1 above, and further in view of McCall.

Miyatake, Chey, and Meyer teach all the elements of the claim except for the method of determining signal amplitude variations by measuring a gain of a signal created by the

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head. McCall teaches this feature at col 2, lines 5-8. At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the teaching of Miyatake, Chey, and Meyer with the suggestion of McCall to use the gain of an amplifier that is based on the amplitude of an analog signal compared to a predetermined amplitude to determine variations in a signal amplitude.

6. Claims 9, 19, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyatake, Chey, and Meyer, as to claim 1 above, and further in view of well known features of the art. Miyatake, Chey, and Meyer teach all the elements of the claim except for the method of determining applying more heat when the head is positioned towards the inner diameter of the track. At the inner diameter of the track, the disk is moving at a greater angular velocity than at the outer diameter. If the head is positioned too high, the amplitude of the signals are more difficult to distinguish from signals on the same track and from adjacent tracks. At the time of the invention it would have been obvious to one of ordinary skill in the art to modify the teaching of Miyatake, Chey, and Meyer with the well-known aspects of the art to suggest that the inner portions of the disk are more prone to require heat to protrude the head closer to the disk.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mitchell R Slavitt whose telephone number is (703) 305-2809. The examiner can normally be reached on M-F (6:30-4:00), 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R Hudspeth can be reached on (703) 308-4825. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600**

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